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EXAMINER	
LO, SUZANNE	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/772,971	Applicant(s) LU, JOSEPH Z.	
	Examiner SUZANNE LO	Art Unit 2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 March 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/19/07*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-31 have been presented for examination. The Request for Continued Examination submitted 03/04/08 has been acknowledged.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 11/19/07 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has been considered by the examiner.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. **Claims 1-6, 9-10, 12-16, 18, 20-23, 25-26, and 28-30** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Madievski et al. (U.S. Patent Application Publication 2004/0057585 A1) in view of Repucci et al. (U.S. Patent Application Publication 2005/0015205 A1).**

As per claim 1, Madievski is directed to a method, comprising: receiving a projection associated with a first signal and a second signal, the second signal comprising a first portion associated with the first signal and a second portion not associated with the first signal, the projection at least partially isolating the first portion of the second signal from the second portion of the second signal **([0008]-[0012], [0050])**; identifying one or more parameters of a model using at least a portion of the projection, the model associating the first signal and the first portion of the second signal **([0043])**; and *generating and storing a model associated with* the one or more model parameters **([0042]-[0043])** but fails to explicitly disclose wherein the projection comprises an upper triangular matrix having two diagonals *that divide the upper triangular matrix into four sections,* a first of the diagonals starting at an upper left corner of the upper triangular matrix and traveling down and right in the upper triangular matrix, a second of the diagonals starting at a lower left corner of the upper triangular matrix and traveling up and right in the upper triangular matrix; and wherein identifying the one or more model parameters comprises using one or more defined areas in the upper triangular matrix, the one or more defined areas located in a single *one of the sections* of the upper triangular matrix.

Repucci teaches projecting a matrix by performing canonical QR-decomposition on the matrix with an orthogonal matrix and an upper triangular matrix **([0010], [0073], page 8, [0101])** having two diagonals *that divide the upper triangular matrix into four sections,* a first of the diagonals starting at an upper left corner of the upper triangular matrix and traveling down and right in the upper triangular matrix, a second of the diagonals starting at a lower left corner of the upper triangular matrix and traveling up and right in the upper triangular matrix wherein identifying model parameters comprises using one or more defined areas in the upper triangular matrix **([0084]- [0089])**, the one or more defined

areas located in a single *one of the sections* of the upper triangular matrix between the first and second diagonals **([0073],[0090])**. Any rectangular matrix (which includes upper and lower triangular matrices), such as the ones disclosed by Repucci, inherently has diagonals that start in lower and upper left corners that travel towards the upper and lower right corners respectively. Additionally, the T_n matrix of [0073] applied as the T' matrix [0090] has the right most column as a defined area within one section of the matrix. The rightmost column of T' is used to solve one of the T_{HD} parameters of [0090]. Madievski and Repucci are analogous art because they are from the same field of endeavor, modeling and separating mixed signals. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the method of separating signals of Madievski with the matrix projection method of Repucci in order to minimize error in the modeled signals **(Repucci, page 8, [0101])**.

As per claim 2, the combination of Madievski and Repucci is directed to the method of claim 1, wherein identifying the one or more model parameters comprises: identifying one or more pole candidates and one or more model candidates using the projection **(Madievski, [0044]-[0045])**; and selecting at least one of the one or more pole candidates and selecting at least one of the one or more model candidates as the model parameters **(Madievski, [0046]-[0047])**.

As per claim 3, the combination of Madievski and Repucci is directed to the method of claim 1, wherein: the upper triangular matrix has a plurality of values along *the* first diagonal each value being greater than or equal to zero **(Repucci, [0010], [0073], page 8, [0101])**.

As per claim 4, the combination of Madievski and Repucci already discloses the method of claim 3, wherein identifying the one or more model parameters comprises: defining the one or more defined areas in the upper triangular matrix **(Repucci, [0101])**; and identifying one or more pole candidates using the one or more defined areas, the one or more model parameters comprising at least one of the one or more pole candidates **(Madievski [0045] and Repucci [0105]-[0106])**.

As per claim 5, the combination of Madievski and Repucci already discloses the method of claim 4, wherein the diagonals divide the upper triangular matrix into upper, lower, left, and right sections; and the one or more defined areas in the upper triangular matrix are located in the right section of the upper triangular matrix **(Repucci, [0101])**.

As per claim 6, the combination of Madievski and Repucci already discloses the method of claim 1, wherein the one or more defined areas in the upper triangular matrix comprise one or more first defined areas **(Repucci, [0101])**; and identifying the one or more model parameters further comprises: defining one or more second areas in the upper triangular matrix; and identifying one or more model candidates using the one or more second defined areas, the one or more model parameters comprising at least one of the one or more model candidates **(Repucci, [0089])**.

As per claim 9, the combination of Madievski and Repucci already discloses the method of claim 4, wherein: defining the one or more areas in the upper triangular matrix comprises defining multiple areas in the triangular matrix **(Repucci, [0085]-[0086])**; and identifying the one or more model parameters comprises identifying one or more model parameters for each of the defined areas in the upper triangular matrix **(Repucci, [0089])**.

As per claim 10, the combination of Madievski and Repucci already discloses the method of claim 9 wherein: the one or more model parameters associated with different defined areas in the upper triangular matrix are different **(Repucci, [0085]-[0086])**; and identifying the one or more model parameters further comprises selecting the one or more model parameters associated with a specific one of the defined areas in the upper triangular matrix **(Repucci, [0087]-[0089])**.

As per claim 28, the combination of Madievski and Repucci is directed to the method of claim 1, wherein the projection at least partially isolates the first portion of the second signal from the second portion of the second signal in an orthogonal space **(Repucci, [0010], [0073], page 8, [0101])**.

As per claim 12, Madievski is directed to an apparatus, comprising: at least one input receiv*ing* a first signal and a second signal, the second signal comprising a first portion associated with the first signal and a second portion not associated with the first signal **([0008]-[0012])**; and at least one processor generating a projection associated with the first and second signals and identifying one or more parameters of a model associating the first signal and the first portion of the second signal using at least a portion of the projection, the projection at least partially isolating the first portion of the second signal from the second portion of the second signal **([0043])** and *generating and storing a model associated with* the one or more model parameters **([0042]-[0043])** but fails to explicitly disclose wherein the projection comprises an upper triangular matrix having two diagonals *that divide the upper triangular matrix into four sections*, a first of the diagonals starting at an upper left corner of the upper triangular matrix and traveling down and right in the upper triangular matrix, a second of the diagonals starting at a lower left corner of the upper triangular matrix and traveling up and right in the upper triangular matrix; and wherein identifying the one or more model parameters comprises using one or more defined areas in the upper triangular matrix, the one or more defined areas located in a single *one of the sections* of the upper triangular matrix.

Repucci teaches projecting a matrix by performing canonical QR-decomposition on the matrix with an orthogonal matrix and an upper triangular matrix **([0010], [0073], page 8, [0101])** having two diagonals *that divide the upper triangular matrix into four sections*, a first of the diagonals starting at an upper left corner of the upper triangular matrix and traveling down and right in the upper triangular matrix, a second of the diagonals starting at a lower left corner of the upper triangular matrix and traveling up and right in the upper triangular matrix; wherein identifying model parameters comprises using one or more defined areas in the upper triangular matrix **([0084]- [0089])**, the one or more defined areas located in a single *one of the sections* of the upper triangular matrix **(page 5, Equation 5)**. Any rectangular matrix (which includes upper and lower triangular matrices), such as the ones disclosed by

Repucci, inherently has diagonals that start in lower and upper left corners that travel towards the upper and lower right corners respectively. Additionally, the T_n matrix of [0073] applied as the T' matrix [0090] has the right most column as a defined area within one section of the matrix. The rightmost column of T' is used to solve one of the T_{HD} parameters of [0090]. Madievski and Repucci are analogous art because they are from the same field of endeavor, modeling and separating mixed signals. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the method of separating signals of Madievski with the matrix projection method of Repucci in order to minimize error in the modeled signals **(Repucci, page 8, [0101])**.

As per claim 13, the combination of Madievski and Repucci is directed to the apparatus of claim 12, wherein the at least one processor is operable to identify the one or more model parameters by: identifying one or more pole candidates and one or more model candidates using the projection **(Madievski, [0044]-[0045])**; and selecting at least one of the one or more pole candidates and selecting at least one of the one or more model candidates as the model parameters **(Madievski, [0046]-[0047])**.

As per claim 14, the combination of Madievski and Repucci is directed to the apparatus of claim 12, wherein: the projection comprises an orthogonal matrix and an upper triangular matrix; and the upper triangular matrix has a plurality of values along the first diagonal of the upper triangular matrix, each value being greater than or equal to zero **(Repucci, [0010], [0073], page 8, [0101])**.

As per claim 15, the combination of Madievski and Repucci already discloses the apparatus of claim 14, wherein the at least one processor is operable to identify the one or more model parameters by: defining one or more areas in the upper triangular matrix **(Repucci, [0101])**; and identifying one or more pole candidates using the one or more defined areas, the one or more model parameters comprising at least one of the one or more pole candidates **(Madievski [0045] and Repucci [0105]-[0106])**.

As per claim 16, the combination of Madievski and Repucci already disclose the apparatus of claim 12, wherein the one or more defined areas in the upper triangular matrix comprise one or more first

defined areas **(Repucci, [0101])**; and the at least one processor is operable to identify the one or more model parameters further by: defining one or more second areas in the upper triangular matrix; and identifying one or more model candidates using the one or more second defined areas, the one or more model parameters comprising at least one of the one or more model candidates **(Repucci, [0089])**.

As per claim 18, the combination of Madievski and Repucci already disclose the apparatus of claim 15 wherein: the at least one processor is operable to define the one or more areas in the upper triangular matrix by defining multiple areas in the upper triangular matrix **(Repucci, [0085])**; and the at least one processor is operable to identify the one or more model parameters by identifying one or more model parameters for each of the defined areas in the upper triangular matrix **(Repucci, [0085]-[0086])**.

As per claim 20, Madievski is directed to a computer program embodied on a computer readable medium, the computer program comprising: computer readable program code *that receives* a projection associated with a first signal and a second signal, the second signal comprising a first portion associated with the first signal and a second portion associated with at least one disturbance, the projection at least partially isolating the first portion of the second signal from the second portion of the second signal **([0008]-[0012], [0050])**; computer readable program code *that identifies* one or more parameters of a model associating the first signal and the first portion of the second signal using at least a portion of the projection **([0043])**; and computer readable program code *that generates and stores a model associated with* the one or more model parameters **([0042]-[0043])** but fails to explicitly disclose wherein the projection comprises an upper triangular matrix having two diagonals *that divide the upper triangular matrix into four sections*, a first of the diagonals starting at an upper left corner of the upper triangular matrix and traveling down and right in the upper triangular matrix, a second of the diagonals starting at a lower left corner of the upper triangular matrix and traveling up and right in the upper triangular matrix; and wherein computer readable program code *that identifies* the one or more model parameters comprises

computer code *that uses* one or more defined areas in the upper triangular matrix, the one or more defined areas located in a single *one of the sections* of the upper triangular matrix.

Repucci teaches projecting a matrix by performing canonical QR-decomposition on the matrix with an orthogonal matrix and an upper triangular matrix **([0010], [0073], page 8, [0101])** having two diagonals *that divide the upper triangular matrix into four sections*, a first of the diagonals starting at an upper left corner of the upper triangular matrix and traveling down and right in the upper triangular matrix, a second of the diagonals starting at a lower left corner of the upper triangular matrix and traveling up and right in the upper triangular matrix wherein identifying model parameters comprises using one or more defined areas in the upper triangular matrix **([0084]-[0089])**, the one or more defined areas located in a single *one of the sections* of the upper triangular matrix **(page 5, Equation 5)**. Any rectangular matrix, such as the ones disclosed by Repucci, inherently has diagonals that start in lower and upper left corners that travel towards the upper and lower right corners respectively. Additionally, the T_n matrix of [0073] applied as the T' matrix [0090] has the right most column as a defined area within one section of the matrix. The rightmost column of T' is used to solve one of the T_{HD} parameters of [0090]. Madievski and Repucci are analogous art because they are from the same field of endeavor, modeling and separating mixed signals. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the method of separating signals of Madievski with the matrix projection method of Repucci in order to minimize error in the modeled signals **(Repucci, page 8, [0101])**.

As per claim 21, the combination of Madievski and Repucci is directed to the computer program of claim 20, wherein the computer readable program code *that identifies* the one or more model parameters comprises: *computer readable program code that identifies* one or more pole candidates and one or more model candidates using the projection **(Madievski, [0044]-[0045])**; and *computer readable program code that selects* at least one of the one or more pole candidates and selecting at least one of the one or more model candidates as the model parameters **(Madievski, [0046]-[0047])**.

As per claim 22, the combination of Madievski and Repucci already discloses the computer program of claim 20, wherein: the upper triangular matrix has a plurality of values along a first *of the* diagonals each value being greater than or equal to zero **(Repucci, [0010], [0073], page 8, [0101])**.

As per claim 23, the combination of Madievski and Repucci already discloses the computer program of claim 20, wherein the one or more defined areas in the upper triangular matrix comprise one or more first defined areas **(Repucci, [0101])**; and the computer readable program code *that identifies* the one or more model parameters comprises: *computer readable program code that defines* the one or more first areas in the upper triangular matrix **(Repucci, [0101])**; *computer readable program code that identifies* one or more pole candidates using the one or more first defined areas **(Madievski [0045] and Repucci [0105]-[0106])**; *computer readable program code that defines* one or more second areas in the upper triangular matrix **(Repucci, [0085]-[0086])**; and *computer readable program code that identifies* one or more model candidates using the one or more second defined areas **(Repucci, [0087]-[0089])**, the one or more model parameters comprising at least one of the one or more pole candidates and at least one of the one or more model candidates **(Madievski [0045] and Repucci [0105]-[0106])**.

As per claim 25, the combination of Madievski and Repucci already discloses the computer program of claim 23, wherein: the computer readable program code *that defines* the one or more areas in the upper triangular matrix defines multiple first areas in the triangular matrix **(Repucci, [0085]-[0086])**; and the computer readable program code *that identifies* the one or more model parameters comprises computer readable program code *that identifies* one or more model parameters for each of the first defined areas in the upper triangular matrix **(Repucci, [0089])**.

As per claim 26, the combination of Madievski and Repucci already discloses the computer program of claim 25 wherein: the upper triangular matrix comprises a first upper triangular matrix **(Repucci, [0073])**, the one or more model parameters associated with different first defined areas in the first upper triangular matrix are different **(Repucci, [0085]-[0086])**; and the computer readable program

code *that identifies* the one or more model parameters further comprises computer readable program code *that selects* the one or more model parameters associated with a specific one of the first defined areas in the upper triangular matrix **(Repucci, [0087]-[0089])**.

As per claim 29, the combination of Madievski and Repucci is directed to the apparatus of claim 12, wherein the at least one processor is further operable to *use* the one or more stored model parameters *associated with the stored model* to de-noise the second signal **(Madievski, [0047]-[0048], [0055])**.

As per claim 30, the combination of Madievski and Repucci is directed to the method of claim 1, wherein: the first diagonal extends from the upper left corner to a lower right corner of the upper triangular matrix; and the second diagonal extends from the lower left corner to an upper right corner of the upper triangular matrix **(Repucci, [0089])**.

4. **Claim 31** is rejected under 35 U.S.C. 103(a) as being unpatentable over Madievski et al. (U.S. Patent Application Publication 2004/0057585 A1) in view of Repucci et al. (U.S. Patent Application Publication 2005/0015205 A1) **in further view of Bechhoefer et al. (U.S. Patent Application Publication 2003/0004658).**

As per claim 31, the combination of Madievski and Repucci is directed to the method of claim 1 but fails to explicitly disclose further comprising controlling at least a portion of a process using the model. Bechhoefer teaches using a model which has been derived from isolating one signal from multiple signals to control adjustments made to rotating blades **([0011])**. Madievski, Repucci, and Bechhoefer are analogous art because they are all from the same field of endeavor, isolating signals. It would have been obvious to an ordinary person skilled in the art at the time of the invention to combine the method of signal isolation of Madievski and Repucci with the control of a process of Bechhoefer in order to avoid structural damage to helicopters **(Bechhoefer, [0005])**.

Allowable Subject Matter

5. Claims 7-8, 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 17, 19, 24, and 27 also contain allowable subject matter but would be allowable only if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The reasons for allowance are held in abeyance until all other outstanding rejections in regards to the instant application are resolved.

Response to Arguments

6. Applicant's arguments filed 03/04/08 have been fully considered but they are not persuasive.

7. The 101 rejection of claims 1-30 are withdrawn due to the amended claims.

8. The 35 USC. 112 rejection of claim 12 and its dependent claims is withdrawn as the Applicant has stated on the record (After Final Remarks dated 01/30/08) that the "input" recited in claim 12 is a physical input, not a signal.

9. The 35 U.S.C. 102 rejection of claims 20-27 have been withdrawn due to the amended claims.

10. In response to Applicant's argument that Repucci does not indicate that two diagonals divide the upper triangular matrix into four sections where defined areas in a single one of those four sections are used to identify model parameters, the Applicant is directed to paragraphs [0073] with matrix T_n and [0090]. The T_n matrix of [0073] applied as the T' matrix [0090] has the right most column as a defined area within one section of the matrix. The rightmost column of T' is used to solve one of the T_{HD} parameters of [0090].

Conclusion

11. The prior art made of record is not relied upon because it is cumulative to the applied rejection. These references include:

1. U.S. Patent No. 6,564, issued to Kadtke et al. on 05/13/06.

2. U.S. Patent Application Publication 2004/0071103A1 published by Henttu on 04/15/04.

3. “Blind signal separation with a projection pursuit index” published by Sarajedini et al. in 1998.

4. "Blind Deconvolution of Dynamical Systems: A State-Space Approach" published by Zhang et al. in March 2000.

5. U.S. Patent No. 6,622,117 B2 issued to Deligne et al. on 09/16/03.

6. U.S. Patent No. 5,980,097 issued to Dagnachew on 11/09/99.

7. U.S. Patent Application Publication 2004/0078412 published by Nakanishi on 04/22/04.

8. U.S. Patent No. 6,907,513 B2 issued to Nakanishi on 06/14/05.

9. U.S. Patent No. 6,757,596 B2 issued to Lin on 06/29/04.

10. U.S. Patent No. 7,003,380 B2 issued to MacMartin et al. on 02/21/06.

11. U.S. Patent No. 7,089,159 B2 issued to Hachiya on 08/08/06.

12. U.S. Patent No. 6,510,354 B1 issued to Lin on 01/21/03.

13. U.S. Patent No. 5,991,525 issued to Shah et al. on 11/23/99.

14. U.S. Patent No. 5,706,402 issued to Bell on 01/06/98.

12. All Claims are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suzanne Lo whose telephone number is (571)272-5876. The examiner can normally be reached on M-F, 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Kamini Shah can be reached on (571)272-2297. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained

from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kamini S Shah/
Supervisory Patent Examiner, Art Unit 2128

Suzanne Lo
Patent Examiner
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SL
05/19/08